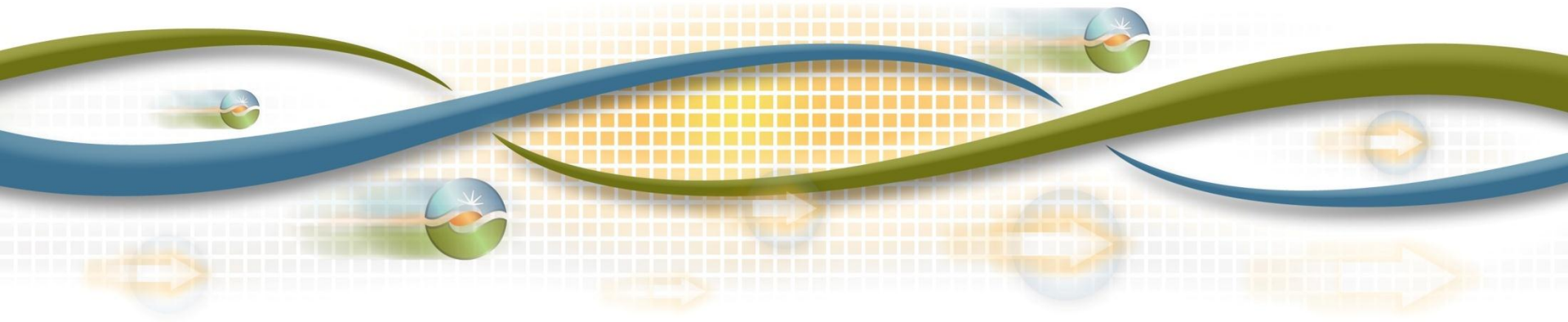


Using ELCC to Calculate Net Qualifying Capacity and Effective Flexible Capacity for DR and Storage Resources

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More discussion of the core ELCC modeling assumptions is needed

- The ISO is committed to working with the CPUC staff and other parties to better understand the staff proposal and the modeling assumptions used
- The proposal and model would benefit from additional public vetting similar to the discussion of the E3, SCE, and ISO models in LTPP

The proposal needs to clarify the treatment of variable energy resources in the ELCC methodology

- It is not clear how the proposed methodology considers the continued penetration of non-diverse VERs
 - More non-diverse VERs will decrease ELCC for a given resource each year (i.e. a resource could have a decreasing NQC over time)

The same ELCC methodology used for calculated NQC may not be appropriate to calculate Effective Ramping Capability (ERC)

- The ELCC and Effective Ramping Capability (ERC) calculated based on the Loss of Load Expectation (LOLE) and Loss of Ramp Expectation (LORE) approaches are sensitive to:
 - System conditions
 - Ramping shortages may not occur at peak load
 - Penetration of variable energy resources
- The model appears to only consider hourly static load
 - Does not recognize five-minute to five-minute load-following needs

Lack of ramping expectancy may not be able to accurately calculate the ERC for DR or storage

- Calculating a lack of ramping expectancy (LORE) depends on an event in which ramping needs cannot be met
 - If there is no such event with DR or storage removed, the EFC cannot be determined
 - If there is no such event with DR or storage included and there are such events with DR removed, it could greatly understate the EFC of DR resources.
 - Likelihood of an event decreased due to assumption of hourly load
- How will the “bundling” principle for flexible and generic capacity apply to DR and storage NQC and EFC?

It is unclear how the model addresses the use-limitations of DR resources

- Model runs single day Monte Carlo simulation using various weather patterns
 - It is not clear that monthly and/or annual DR use limitations are considered
- Treatment of various operating states for DR and storage requires additional clarification
 - Outage rates and operational parameters
 - Correlation with load
 - i.e. weekday/weekend differences
 - Performance levels

Implementing some aspects of the proposal would require stakeholder initiatives at the ISO

- While the ISO may host a stakeholder process to address these issues in the near future, ISO does not currently have a market functionality for
 - Aggregation of DR across an LSE
 - The ISO is currently able to aggregate by sub-LAP by LSE.
 - All DR must be identified by sub-lap and LSE, can't have multiple LSEs in single PDR resource
 - Aggregation of storage resources across an LSE
 - Aggregation of storage and DR resources